

INITIAL INSPECTION

Please, check that the contents of the consignment are correct and verify that no element has been damaged during the transport. In case of mistaken or damaged material, please state an immediate claim to the transport carrier and notify it immediately to the manufacturer or distributor, either for a new remittance or for the repair or replacement of the damaged material.

SAFETY CONSIDERATIONS

All the devices described in this manual have been designed to be properly performed by qualified technical personnel only. Personnel skilled enough to foresee the possible consequences of inadequate handling, must carry out the installation, setting, maintenance or repair of this equipment.

For a correct and safe use of the provided equipment and in order to achieve the best possible security conditions, it is essential to follow not only general security procedures but also the special ones described in this manual.

Never switch on the systems in case there is the smallest suspicion of bad functioning.

For instance, in case of detecting apparent damages which could be consequence of transport or storage, etc.

Before any setting or maintenance operation, disconnect the equipment from any power supply or optical emitter. After electrical disconnection, inside capacitors could remain loaded for one second.

Active power circuitry could appear when protecting lids or coverings are taken away. Likewise, unplugged optical connectors must be immediately covered with the corresponding protecting caps.

In case the equipment needs to be checked while it is functioning, remember that maintenance operations can only be carried out by qualified technical personnel who is aware of the risks of the operation, both from the electrical and optical point of view.

The security classification of this product is Class III.

The modification of the electrical protection elements and the disconnection of the earth terminal may result in personal injury.

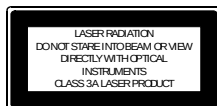
Before the equipment is switched on, make sure that it has been properly grounded (through the protective conductor of the a.c. power cable) to a socket outlet provided with protective earth contact.

The earth circuit cover of the electrical external connectors must not be used as protective general earth contact for the equipment.

The optical transmitters could cause safety problems to the personnel in charge of the installation, test, service or maintenance of the equipment. This is due to the high level of optical power in some fibre-optic installations and to the fact that light radiation is infrared type (not visible for the human eye).

In consequence, never look directly either at the optical output of an optical transmitter, or at the end of an optical fibre connected to an active optical transmitter. This situation will be especially dangerous when the inspection takes place with the assistance of light focusing elements, magnifying glasses, microscopes, etc.

In case these recommendations are not followed, eyes would be exposed to a level of light radiation that would be higher than the maximum admissible level. This could result in permanent and irreversible damages in eyes.



The use of controls, adjustments or procedures different from the ones specified here, could cause a dangerous exposure to radiation.

DESCRIPTION

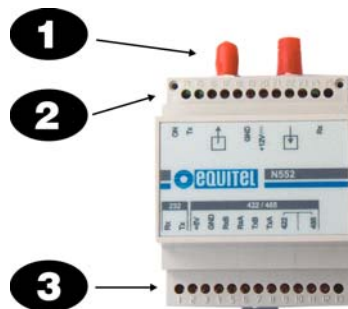
EQUITEL N552 has been designed for long distance fibre-optic transmission of one data channel with the following possible line interfaces: RS-232, RS-485 (2 wires), RS-485 (4 wires) and RS-422.

The communication is carried out by means of two optical fibres, which allows a full duplex communication between the two ends, with all the advantages associated to fibre optic transmission: immunity to external electromagnetic interference, elimination of the problems related to the existence of earth loops, etc.

N552 has been designed for singlemode or multimode optical fibre links. The light emitter which is employed is either a LED diode (in multimode fibre) or a Laser (in singlemode fibre) and a PIN photodiode is the light receiver. As regards format, it is a stand-alone box for DIN rail fixation. It requires 12 Vdc external power supply.

EQUITEL model N552 is configured as DCE. In consequence, the equivalent electrical connection between the units located at both ends of the link is the usual one in XON/XOFF protocol communications

The following photograph shows the most important parts of this device:



- 1 Optical connectors
- 2 Indicators and power supply terminals (CM version)
- 3 Power supply (A version) and data terminals

In N552 equipment, terminals 1, 2 and 4 correspond to the output, input and ground electrical signal (Rx, Tx and GND) of RS-232 interface. When RS-422 or RS-485 (4w) electrical interface is employed, terminals 5 and 6 correspond to output signal (RxB and RxA), terminal 7 and 8 to input signal (TxB and TxA) and terminal 4 to signal ground (GND).

Terminals 9, 10 and 11 are used for RS-422 or RS-485 interface selection. If terminals 9 and 10 are short-circuited, RS-422 is selected. If terminals 10 and 11 are short-circuited, RS-485 is selected. In case you want to use RS-485 (2w), you have to join TxA with RxA and TxB with RxB.

In RS-485 interface, the correct operation of a bus system with several devices in parallel is guaranteed by employing pull-up, pull-down and line termination resistors in the system. EQUITEL N552 is provided with terminals 3 and 5 (+5V and RxB) for pull-up resistors, and terminals 4 and 6 (GND and RxA) for pull-down.

Typical pull-up and pull-down resistance values are as follows: 4.7 kΩ if line termination resistors are not employed and 1.5 kΩ if 120 Ω line termination resistors are employed. For further information please see TIA / EIA – 485 norms.

INSTALLATION

First, fix the N552 unit in a DIN 50022-35 rail. The single-fibre cables must be connected to the optical input and output connectors (1 in the picture) after removing the protective cover of the connectors. For the optical interconnection of two N552 units, the optical output of one of them must be connected to the optical input of the other one, and vice-versa. Remember to replace the protector in case the cable is temporarily disconnected.

Do not connect unless you have previously cleaned the single-fibre cable connector with a soft paper dampened with alcohol. Introduce the connector carefully in the optical sign input in order to avoid damages in the polished surface.

Then, screw in the data terminal (3 in the picture) the data cables that are required for the application and the pull-up and pull-down resistors that may be necessary. Finally, connect the external power supply between +12 Vdc and GND (CM version 20 and 19 terminals, A version 12 and 13 terminals). The ON indicator (2 in the picture) will turn on.

If the above mentioned steps have been properly followed and the attenuation and type of fibre specifications for the

optical-lying have been respected, the link will be ready to work.

OPERATION

Once the equipment is installed, it does not require any additional attention for its correct operation.

For testing purposes, these two LED indicators are provided:

- a) Tx channel emission (2 in the picture). If it is activated, it means that a data signal is being received at the electrical connector. This signal is to be transmitted by optical fibre through the optical output connector.
- b) Rx channel reception (2 in the picture). If it is activated, it means that a data signal is being transmitted at the electrical connector. This signal has been retrieved from the optical signal received at the optical input connector.

MAINTENANCE

This equipment has been designed to require no maintenance periodical operations and to keep a good long-term stability.

In order to prolong the life of the equipment, the following rules in optical connection and disconnection must be observed:

- The optical output connectors must be thoroughly cleaned before connecting the equipment. Use an optical-cleaning paper or gauze dampened with ethylic or isopropilic alcohol. Dry carefully the connector afterwards.

- Protect the optical connector of the equipment with the original protector cap every time it is going to be disconnected for a long time. Excessive environmental dust and humidity must be avoided during this maintenance phase.

The introduction of strange mechanical elements in the optical connector may result in irreparable damage in the optical components.

TECHNICAL CHARACTERISTICS**OPTICAL PARAMETERS**

Optical emitter	LED / Laser (CM / A vers.)
Optical receiver	PIN
Wavelength (note 1)	850 nm (CM vers.) 1,310 nm (A vers.)
Type of fibre	Multimode (CM vers.) Singlemode (A vers.)
Optical power (peak) (note 2)	≥ -11 dBm (10/125 µm) ≥ -19 dBm (50/125 µm) ≥ -16 dBm (62.5/125 µm)
Sensitivity (notes 2 and 3)	≤ -36 dBm

ELECTRICAL PARAMETERS

Electrical interface	RS-232, RS-422 & RS-485
Maximum binary rate	64 kbit/s asynchronous
Operation mode	Full duplex, half duplex
Equivalent electr. connection	Configured as DCE

POWER PARAMETERS

Power requirements	12 Vdc
Consumption (note 1)	< 1 W

MECHANICAL PARAMETERS

Format	Box for DIN rail
Dimensions	72 x 103 x 72 mm.
Optical connector	ST, FC/PC (CM, A vers.)
Electrical connector	Screw-in terminal

ENVIRONMENTAL CONDITIONS

Temperature range	-40 °C to +74 °C
Humidity range	0 to 95% without condensat.

INDICATORS

Unit in operation	Green	ON
Transmitted data	Green	TX
Received data	Green	RX

Note 1.- Typical values, as a production average
Note 2.- Actual values are given in the test sheet. These values are measured according to the test procedure for this device

Note 3.- Value guaranteed for a BER < 10⁻⁹ in all the operating range.

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